Chapter Four – Environmental Impacts

Introduction

This chapter provides an analysis of the impacts that are expected under any of the alternatives. It focuses on the potential impacts that may result from the proposed uses and activities presented in Chapter 2, and avoids speculation of unlikely events. It describes mitigation measures that could be taken to avoid or minimize impacts. This information is presented in a table that summarizes the impacts by alternative. The chapter assesses the direct, indirect and cumulative impacts of the three alternatives, as is required by the National Environmental Policy Act (NEPA) of 1969. This assessment also supports Maryland's environmental review requirements for State lands.

Assumptions

The following assumptions were made to conduct the analysis:

1. The alternatives would be implemented substantially as described in Chapter 2.
2. The BLM and its partners would have the funding and personnel required to implement the plan.
3. The BLM and its partners, despite operating under diverse requirements, will work cooperatively to provide a seamless operation to the public.
4. Assumed trends in recreation and tourism would be largely met.
5. The planning period for the analysis is ten to fifteen years after plan approval and when implementation begins. Short-term impacts are those that would occur during the first five years of plan implementation. Long-term impacts are those that would occur beyond the first five years. The plan may be implemented in phases as the required resources become available.
6. All site design for all structures and facilities shall be evaluated through the NEPA process (federal) and/or the project review (State) process for the purpose of determining and incorporating applicable site-specific federal and State environmental regulations. These processes and the associated guidance documents from the federal and State regulatory agencies' guidance documents are the source of the best management practices referenced throughout these assumptions. The best management practices must be incorporated into the design and implemented on the site in order to obtain and keep the required approvals and permits.
7. Site design and monitoring will incorporate best management practices, and will be employed to minimize disturbance to all sensitive areas, including slopes, highly erodible soils, wetlands, cultural sites and sensitive habitats, etc., for trails and facilities.
8. All properties will be closed to OHV/ORV, grazing & mineral leasing.
9. Motorized boating access is not feasible at the Naval Observatory, Douglas Point or Purse SP property due to the presence of steep slopes, shallow water depths off-shore, and\or lack of sheltered locations.
10. Safety will be a factor considered in the design, implementation, use and management of the properties.
11. Priority will be given to placing facilities in areas previously cleared of vegetation or not containing significant forest habitat. Forest fragmentation will be avoided to the greatest extent

possible. Large blocks of forest will be maintained to protect forest interior dwelling species (FIDS) habitat. If impacts to FIDS habitat within the Critical Area are proposed, mitigation will be required in accordance with the Critical Area Commission's guidance publication.

12. Vegetation associations, tree stand integrity and habitat consistency would be considered during trail and facility design.
13. Where feasible, areas with rare, threatened and endangered flora will be avoided and protected from disturbance by including appropriate buffers around them to mitigate accidental impacts. Protective and restorative management techniques should be employed to maintain viability of the species and habitat. The agencies will assess during implementation the feasibility of maintaining open habitat areas to support protected plant species. Within the Critical Area portion of the properties, impacts to rare, threatened and endangered species and their habitats are generally prohibited without a conditional approval from the Critical Area Commission.
14. Maintain appropriate buffers around rare, threatened and endangered fauna habitat, and avoid to the extent possible.
15. Ecological restoration will occur wherever appropriate, particularly in riparian areas.
16. All management actions will be conducted in a manner conforming to the water quality management objectives that have been developed by the State of Maryland.
17. All future management actions under this plan will be conducted in a manner that conforms to the objectives of the Maryland State Historical Trust, and applies to federal regulatory requirements.
18. Measures for minimizing soil erosion will be made on a site-specific basis through evaluation of management actions and implementation of best management practices in accordance with Maryland Department of Environment (MDE) sediment and erosion control regulations, the Forest Conservation Act (FCA) and the Critical Area regulations.
19. Proposed uses will be evaluated for their potential to release hazardous materials into the environment. Use of hazardous materials/chemicals at the project site/Planning Area is prohibited. The discovery of illegal dumping will be handled in accordance with the reporting, identification, and remediation requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
20. All future management actions under this plan will be conducted in a manner that conforms to the objectives of the Maryland Air Quality Implementation Plan.
21. Applicable fire management practices will emphasize fire prevention, hazardous fuel reduction, rapid response and use of appropriate suppression techniques.

Summary of Alternatives with Associated Activities

Refer to Chapter 2 for a comprehensive description of the activities expected under each of the alternatives. The following section briefly describes the alternatives for easy reference.

Alternative 1 – "No Action" required under the National Environmental Policy Act (NEPA), would be a continuation of current management, and provides a baseline to which other alternatives can be compared. Alternative 1consists of currently authorized activities under interim management. The BLM portion of the Douglas Point tract would be open to passive use only and the former-Maryland Point Naval Observatory would remain closed to the public (removal of the structures and other remediation can go forward without land use planning). State laws will guide interim uses at Wilson

Farm until the plan is completed. Purse State Park will continue to be managed as it is currently. No additional federal land acquisitions would be authorized under this alternative.

Alternative 2 – "Heritage Alternative" emphasizes the area's cultural and historic resources and includes low intensity recreation use of the public land. Limited construction of new facilities, small campgrounds and trails would be allowed. Federal land acquisitions would be allowed, but would focus on protecting cultural resources at risk. No motorized vehicles would be allowed on the Douglas Point tract.

Alternative 3 – "Nature Tourism Alternative" considers a moderate level of recreation use. This alternative would allow the construction of one boat ramp, interpretative signage and small- to moderate-sized campgrounds. Acquisition of new properties would be allowed based on a set of criteria, such as the State's Green Infrastructure initiative, consistent with the Federal Land Policy and Management Act. New facilities could include a visitor's center to interpret the region's cultural and historical heritage, diversity and abundance of natural resource values and for other purposes. Construction of one or more parking lots would be considered; the exact location and size would be determined in future site design. New trails could be built to connect public lands and consideration would be given to acquiring easements or purchasing land to construct the trails. Trails would be open to a variety of recreational pursuits, including hiking, mountain biking and horseback riding. No Federal or State lands would be opened to off-road vehicle use.

Alternative 4 – "Community Vision Alternative" evaluates the natural and heritage and recreational opportunities recommendations from the "Nanjemoy Naturally" community vision plan. Potential activities would include the prohibition of siting facilities on the west side of MD State Route 224 on the Douglas Point tract. Trails and trail enhancements would be considered after site specific assessment to avoid sensitive resources. No motorized vehicles would be allowed on the Douglas Point tract. Future uses for the Maryland Point property would be considered in a site specific recreation implementation plan.

Other properties

Ben Doane Road (PEPCO Tracts 1 & 2)

West side of MD 224

This tract has historically been used as a forested area and for hunting. Evidence of ORV use from adjacent properties exists despite posted signs stating prohibition of use. Passive use of this property will continue. Hiking and hunting that is managed by the Wildlife and Heritage Service will continue. Parking is currently a cleared area on the shoulder of Ben Doane Road. No infrastructure is planned for the area.

East side of MD 224

This forested tract has historically been used for hunting and some equestrian use. Passive use of this property is expected to continue. Hiking and hunting that is managed by the Wildlife and Heritage Service will continue. Parking is currently a cleared area on the shoulder of Ben Doane Road, across MD 224. No infrastructure is planned for the area. The property should be monitored to prevent adverse impacts due to informal use by the public. Some impacts may

include compaction of soil and erosion due to over-use of the parking area, unplanned trails blazed by visitors, impacts to understory vegetation, and erosion and degradation of streams and wetlands where informal crossings exist, and the potential for accidents due to unsigned pedestrian crossing. These impacts can be mitigated through site monitoring and posting and marking MD 224 for pedestrian crossing.

Summary of Environmental Impacts

The following table summarizes the impacts to the affected resources under each alternative at each of the four major properties. It may also be used to compare and contrast the alternatives to each other. The table also briefly describes possible mitigation measures that may be used to avoid, reduce or eliminate potential impacts.

Table 1. Summary of Environmental Impacts

Issues	Alt No.	Douglas Point	Wilson Farm	Purse State Park	Maryland Pt.
Air Quality	1	No impacts			
	2, 4	Impacts: Negligible local impacts due to increased visitation to the area.			No impacts
	3	Impacts: Negligible local impacts due to increased visitation to the area.			
Geology	All	No impacts			
Topography	1	No impacts			
	2	Impact: Grading may be required to improve parking.	Impact: Grading may be required for parking, roads, boat launch facility and structures.	No additional impacts	No impacts
		Mitigation: Grading should follow contours of the land to prevent erosion and avoid steep slopes, where feasible.			
	3	Impacts: Grading may be required for placement of parking, roads, and structures.	Impacts: Grading may be required for placement of parking, roads structures and construction of boat ramp/launch.	Impacts: Grading may be required for placement of parking, roads, and structures.	

		Mitigation: Grading should follow contours of the land to prevent erosion. Avoidance of steep slopes.			
	4	Impacts: Grading may be required for placement of parking, roads, and structures.	Impacts: Grading may be required for placement of structures and placement of boat ramp/launch.	Impacts: Grading may be required for improvement of parking.	No impacts
		Mitigation: Grading should follow contours of the land to prevent erosion and avoid steep slopes, where feasible.			No impacts
Soils	1	Impacts: Unmanaged visitation and lack of trail design may cause localized erosion and compaction in areas where the public creates trails. Mitigation: Trail and other recreational uses should be regularly evaluated to revise visitor management strategies.		Impacts: Continued informal trail establishment and poor parking situation may cause erosion where current parking lot exists and along water access routes.	No impacts
Soils (cont)	2	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, and water access. Fireline construction by mechanical means may cause soil disturbance.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use and boat launch. Fireline construction by mechanical means may cause soil disturbance.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, and water access Fireline construction by mechanical means may cause soil disturbance.	No impacts

		Mitigation: Site design should incorporate best management practices to avoid and minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable. Avoid steep slopes and soils prone to erosion, where feasible.			No impacts
Soils (cont.)	3	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use areas, camping, mountain biking, and water access.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use areas, camping, boat ramp/launch area, and water access.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, and water access.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use areas, camping, and water access.
		Fireline construction by mechanical means may cause soil disturbance.			
		Mitigation: Site design should incorporate best management practices to avoid and minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable or caused by intense uses such as equestrian, mountain biking, and popular hiking trails.	Mitigation: Site design should incorporate best management practices to minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable.	Mitigation: Site design should incorporate best management practices to minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable.	Mitigation: Site design should incorporate best management practices to minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable.

		Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use areas, camping, mountain biking	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, day use areas, camping, boat ramp/launch, and water access.	Impacts: Compaction and erosion of highly erodible and hydric soils may occur in areas of trails, interpretive sites, and water access	No impacts
	4	Fireline construction by mechanical means may cause soil disturbance.			
		Mitigation: Site design should incorporate best management practices to avoid and minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable or caused by intense uses such as equestrian, mountain biking, and popular hiking trails.	Mitigation: Site design should incorporate best management practices to avoid and minimize erosion and compaction of soil, to prevent runoff of sediments where impacts are unavoidable, or caused by intense uses such as popular hiking trails.	Mitigation: Site design should incorporate best management practices to avoid and minimize erosion and compaction of soil, and prevent runoff of sediments where impacts are unavoidable, or caused by intense uses such as equestrian.	
Water Resources	1	No impacts			

	2	Impacts: Localized degradation may result due to increased visitation and recreational uses and trail crossings. Mitigation: Degradation of streams and wetlands should be avoided by directing runoff from new parking lots and other structures to bio-retention treatment areas before discharge into water bodies. Establish buffers surrounding all riparian areas that take into account steep slopes, vegetation and habitat.	No impacts
	3	Impacts: Localized degradation may result due to increased visitation and recreational uses and trail crossings. Extraction of water from aquifers for comfort stations and camping at Douglas Point, Wilson Farm, and Maryland Point. Upgrade entrance road may impact wetlands at Maryland Point. Mitigation: Degradation of streams and wetlands should be avoided by directing runoff from new parking lots and visitor centers/other structures to bio-retention treatment areas before discharge into water bodies. Establish buffers surrounding all riparian areas that take into account steep slopes, vegetation and habitat.	
	4	Impacts: Localized degradation may result due to increased visitation and recreational uses and trail crossings. Extraction of water from aquifers for visitor center and camping at Douglas Point, Wilson Farm and Maryland Point. Mitigation: Degradation of streams and wetlands should be avoided by directing runoff from new parking lots, and visitor centers/other structures to bio-retention treatment areas before discharge into water bodies. Establish buffers surrounding all riparian areas that take into account steep slopes, vegetation and habitat.	Impacts: Widening and upgrade of entrance road would affect wetlands. Mitigation: BMPs would be employed to reduce impact to wetlands. May include off-site replacement.

Vegetation	1	Impacts: Increased visitation, use of undesignated paths, and lack of trail maintenance may degrade habitat and plant/tree health. Mitigation: Monitor site to identify any degradation from over use and implement measures to minimize or prevent the impacts.	Impacts: Natural regeneration would occur unless maintenance is continued. No fire protection plan may result in larger losses due to unpredicted fire.
Vegetation (cont)	2	Impacts: Increased visitation and use of undesignated paths may degrade habitat and plant/tree health. Removal of vegetation may be required for construction of parking lots, structures, day use areas, and possibly trails. Impacts may be greater at Wilson Farm because more activity is directed to this site. Fireline construction by mechanical means may cause soil disturbance, selective tree removal and possibly burning-out operations to prevent the fire from spreading across a fireline. Mitigation: Site design should utilize natural openings in the canopy and understory, avoid high quality habitat, and minimize intrusion into sensitive areas. Planting of trees should promote transition from activity areas to natural areas. Fire management plan would improve fire control capabilities	Impacts: Natural regeneration would occur unless maintenance is continued. No fire protection plan may result in larger losses due to unpredicted fire. Mitigation: Fire management plan would improve fire control capabilities

	3	Impacts: The potential for degradation of habitat and individual plant health from increases in visitation at point of human contact would likely increase. Removal of some vegetation may be required for Heritage/Visitor center construction and camping at Douglas Point and/or Wilson Farm, a boat ramp/launch at Wilson Farm, day use facilities, establishment and hardening of paths and trail network, and parking at all three properties. Fireline construction by mechanical means may cause soil disturbance, selective tree removal and possibly burning-out operations to prevent the fire from spreading across a fireline. Mitigation: Site design should utilize natural openings in the canopy and understory, avoid high quality habitat, and minimize intrusion into sensitive areas. Planting of native vegetation would promote transition from activity areas to natural areas. Fire management plan would improve fire control capabilities.	Impacts: Active reforestation would control species reintroduction. Water access may cause disturbance to shoreline vegetation. Fire control measures may require some vegetation removal as necessary. Mitigation: Reforestation and/or landscape plantings would increase vegetation and habitat.

Vegetation (cont)	4	Impacts: The potential for impacts to vegetation from increases in visitation and recreational uses would be likely. Establishment and hardening of paths and trails, construction of a visitor/heritage center at Wilson Farm, installation of a boat launch at Wilson Farm, day use facilities at Douglas Point and Wilson Farm, and parking at the three properties may require disturbance to vegetation. Fireline construction by mechanical means may cause soil disturbance, selective tree removal and possibly burning-out operations to prevent the fire from spreading across a fireline. Mitigation: Site design should utilize natural openings in the canopy and understory, avoid high quality habitat, and minimize intrusion into sensitive areas. Planting of native vegetation would promote transition from activity areas to natural areas. Fire management plan would improve fire control capabilities.	Impacts: Active reforestation would control species reintroduction. Fire control measures may require some vegetation removal as necessary. Mitigation: Reforestation and/or landscape plantings would increase vegetation and habitat.
Forestry	1, 2, 4	No impacts. Before any forest management activities would take place, a forest management plan will be developed.	
	3	Impacts: Short term change in forest cover, increased road use, increased sunlight to forest floor that will increase natural regeneration and increase of woody debris in the forest. Selective harvesting would alter structure of forest community. Mitigation: A forest management plan will be developed. Harvest methods should retain natural character of forest and minimize degradation to habitat.	

Chesapeake Bay Critical Area	1	No impact.	
Chesapeake Bay Critical Area (cont)	2	Impacts: Increased human activity within the Critical Area. Refer to specific resource for other impacts. Disturbance would occur in the Critical Area Buffer at water access points on the properties, and for installation of boat launch at Wilson Farm. Mitigation: Mitigation will be required for tree removal. Impervious surface limits (15% of site) will apply. New development activities (except water development facilities) prohibited in the buffer. Protection of FIDs habitat and/or mitigation will be required. Impacts to buffer will be mitigated according to regulations.	No impact. Potential reforestation site.
	3	Impacts: Increased human activity within the Critical Area. Refer to specific resource for other impacts. Disturbance would occur in the Critical Area Buffer at water access points on all three properties, and for installation of boat ramp/launch at Wilson Farm and for water access for car top boats at Maryland Point. Mitigation: Mitigation will be required for tree removal. Impervious surface limits (15% of site) will apply. New development activities (except water development facilities) prohibited in the buffer. Protection of FIDs habitat and/or mitigation will be required. Impacts to buffer will be mitigated according to regulations.	

Chesapeake Bay Critical Area (cont)	4	Impacts: Increased human activity within the Critical Area. Refer to specific resource for other impacts. Disturbance to the Critical Area Buffer, including grading and possible vegetation removal, for installation of boat launch would be required. Impacts to Buffer will be identified during project review of site designs and mitigated according to regulations. Mitigation: Mitigation will be required for tree removal. Impervious surface limits (15% of site) will apply. New development activities (except WDF) prohibited in the Buffer.	No Impacts. Potential reforestation site.
Invasive Plant Species	1	Impacts: Invasive plants may colonize at an uncontrolled rate due to lack of management and unregulated visitation.	
	2,4	Impacts: New species introduction and spreading distribution of invasive species may occur. New network of trails may introduce invasive plants into forest interior, degrading forest community and reducing habitat quality for native wildlife. Clearing for parking lots, visitor center, and day use facilities, will promote invasive species around each facility. Mitigation: Active removal/control of known populations of invasive weeds.	Impacts: Invasive plants may colonize at an uncontrolled rate due to lack of management unless current level of maintenance is continued. Mitigation: Control of invasive plants via monitoring and management.

	3, 4	Impacts: New species introduction and spreading distribution of invasives may occur. New network of trails may introduce invasive plants into forest interior, degrading forest community and reducing habitat quality for native wildlife. Clearing for parking lots, visitor center at Douglas Point and/or Wilson Farm, day use facilities, campgrounds will promote invasive species around each facility. Mitigation: Active removal/control of known populations of invasive weeds.	Impacts: Invasive plants may colonize at an uncontrolled rate due to lack of managed regeneration unless current level of maintenance is continued. Additional visitation may introduce species. Mitigation: Active removal/control of known populations of invasive
Wildlife	1	No impact	Impacts: Populations of species preferring edge habitat may increase due to unmanaged natural regeneration.

	2	Impacts: New trails may introduce edge wildlife species into forest interior to detriment of forest interior wildlife species. Clearing for parking lots, visitor/heritage center at Wilson Farm, boat launch facility at Wilson Farm, and day use facilities will promote edge wildlife species around each facility to detriment of forest interior species. Increased visitation may cause additional automobile/animal collisions Mitigation: Locate trails outside exemplary natural communities. Locate facilities outside forest or along existing forest edges. Control populations through hunting..	Impacts: Populations of species preferring edge habitat may increase due to unmanaged natural regeneration. Mitigation: Manage populations through hunting.
	3	Impacts: New network of trails may introduce edge wildlife species into forest interior to detriment of forest interior wildlife species. Clearing for parking lots, visitor center, at Douglas Point and/or Wilson Farm, Boat ramp/launch facility at Wilson Farm, water access and various uses at Maryland Point, day use facilities, campgrounds may promote edge wildlife species around each facility to detriment of forest interior species. Increased visitation may cause additional automobile/animal collisions Mitigation: Locate trails outside exemplary natural communities. Locate facilities outside forest or along existing forest edges. Control populations through hunting; protections as identified/necessary.	

	4	Impacts: New network of trails may introduce edge wildlife species into forest interior to detriment of forest interior wildlife species. Clearing for parking lots, visitor center and boat launch at Wilson Farm, and day use facilities, may promote edge wildlife species around each facility to detriment of forest interior species. Increased visitation may cause additional automobile/animal collisions. Mitigation: Locate trails outside exemplary natural communities. Locate facilities outside forest or along existing forest edges. Control populations through hunting.	Impacts: Populations of species preferring edge habitat may increase due to unmanaged natural regeneration. Mitigation: Control populations through hunting.
Fisheries	1	No impact	
	2	Impacts: Increased impervious surface may increase runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could affect habitat. Damage to habitat may result from boating associated with boat launch installation and use. Potential impacts to fisheries could occur with the placement of the launching ramp and channel for motorized boat passage. Mitigation: Runoff from facility development should be directed to bio-retention treatment areas - placement of any type of launching ramp and related facilities should avoid impacts to the boat basin, because of its habitat values.	No impact

Fisheries	3	Impacts: Increased impervious surface increases runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could result. Potential timber harvesting could result in erosion, sedimentation of creeks, and increased runoff volume/velocity.	Impacts: Increased impervious surface increases runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could result. Damage to habitat may result from boating associated with boat launch installation and use.	Impacts: Increased impervious surface increases runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could result.	Impacts: Increased impervious surface increases runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could result.
		Mitigation: Runoff from facility development should be directed to bio-retention treatment areas.	Mitigation: Careful placement of launching/ramp and channel for motorized boat passage. Runoff should be directed to bio-retention treatment areas before discharge. Because the boat basin is protected from wind and waves, it provides quality spawning/ nursery habitat to many species and should be protected from these impacts.	Mitigation: Runoff from facility development should be directed to bio-retention treatment areas - placement of any type of launching ramp and related facilities should avoid impacts to the boat basin, because of its habitat values.	Mitigation: Runoff from facility development should be directed to bio-retention treatment areas.

	4	Impacts: Increased impervious surface increases runoff volume and velocity. Coupled with heavy trail use, erosion and sedimentation could result. Potential impacts to fisheries should be avoided by careful placement of boat launch and channel. Mitigation: Runoff from facility development should be directed to bio-retention treatment areas - placement of any type of launching ramp and related facilities (Wilson Farm only) should avoid impacts to the boat basin, because of its habitat values.	No impact	No impact
Special Status Species	1	Impacts: Possible incidental impacts from casual users illegally collecting species and from lack of on the ground management and monitoring.		
	2	Impacts: Increased level of visitation and possible construction of a visitor center may have an effect on special status species due to removal of vegetation, higher noise levels and human presence in areas previously uninhabited. Predators and invasive species may impact habitat quality as a result of trail use and day use activities. Mitigation: Surveys for rare/sensitive species shall be conducted prior to locating trails, parking lots or visitor facilities. Protection of species and habitat via avoidance and Ecological Sensitive Area (ESA) buffers would be established to ensure persistence and survival. Sec. 7 Endangered Species Act consultation with US Fish and Wildlife Service during implementation planning and prior to on the ground activities.		

	3	Impacts: Increased level of visitation and possible construction of larger visitor center than Alts 2 and 4 under this alternative may have a greater effect on special status species due to removal of vegetation, higher noise levels and human presence in areas previously uninhabited. Predators and invasive species may impact habitat quality as a result of trail use and day use activities. Mitigation: Surveys for rare/sensitive species shall be conducted prior to locating trails, parking lots or visitor facilities. Protection of species and habitat via avoidance and buffers should ensure persistence and survival. Sec. 7 Endangered Species Act consultation with US Fish and Wildlife Service during implementation planning and prior to on the ground activities.
	4	Impacts: Increased level of visitation and possible construction of visitor center may have an effect on special status species due to removal of vegetation, higher noise levels and human presence in areas previously uninhabited. Predators and invasive species may impact habitat quality as a result of trail use and day use activities. Mitigation: Surveys for rare/sensitive species shall be conducted prior to locating trails, parking lots or visitor facilities. Protection of species and habitat via avoidance and buffers should ensure persistence and survival. Sec. 7 Endangered Species Act consultation with US Fish and Wildlife Service during implementation planning and prior to on the ground activities. .

Cultural and Historic Resources	1	Impacts: Degradation and adverse effects to cultural and historical resources may result from administrative benign neglect, looting, vandalism or unintended abuse from curious visitors. No or few management actions will result in minimal support and funding to perform baseline archaeological inventories, evaluation of site eligibility/significance and for protection and stabilization of threatened resources.	Impact: Low likelihood of impact on the Md. Point property due to fence.

Cultural and Historic Resources (cont.)	2	Impacts: Degradation of the quality of the resource may result from grading, construction, overuse of interpretive sites, unintended abuse from curious visitors, and looting. These impacts may result from trail use, cultural tours, day use visitors, hunters, etc. At Wilson Farm, potential degradation of underwater resources may occur as a result of boat traffic from the launch, curious visitors, fishing activities, and looting. Mitigation: Prior to any potential Federal or State undertaking – i.e. grading for or construction of any amenity, facility, trail or structure, the BLM and DNR shall adhere to the guidelines for compliance within 36 CFR 800 (Section 106) of the National Historic Preservation Act and Maryland Historic Trust's guidelines for historic preservation. A comprehensive cultural resources management plan and site interpretive plans should address potential impacts to cultural resources. Adverse effects due to trail construction, overuse of interpretive sites, looting and vandalism can be mitigated by carefully selecting sites for public interpretation, performing archaeological data recovery and recordation, capping/hardening high use areas (i.e. trails) and careful placement of barriers and interpretive signage. Planning for interpretive sites should link to ongoing regional and local heritage tourism initiatives. Conduct a survey of submerged archeological resources prior to constructing boat ramp or pier, or the dredging of channels at Wilson Farm/Mallows Bay. Some areas may need to be posted for the prohibition of artifact disturbance or collection.	Impact: Unknown until site surveys are conducted to determine extent of cultural resources.

Cultural and Historic Resources, cont	3	Impacts: Degradation of the quality of the resource may result from grading, construction, overuse of interpretive sites, unintended abuse from curious visitors and looting. Impacts may result from trail use, cultural tours, day use visitors, hunters, etc. At Wilson Farm and Maryland Point, potential degradation of underwater resources may occur as a result of boat traffic from the launch, curious visitors, fishing activities, and looting. Mitigation: See Alt. 2		Impact: Unknown until site surveys are conducted to determine extent of cultural resources.
	4	Impacts: Degradation of the quality of the resource may result from grading, construction, overuse of interpretive sites, unintended abuse from curious visitors, and looting. These impacts may result from trail use, cultural tours, day use visitors, hunters, etc. At Wilson Farm, Potential degradation of underwater resources may occur as a result of boat traffic from the launch, curious visitors, fishing activities, and looting. Mitigation: See Alt 2		
Paleontology	1	Impacts: Paleontological resources could be affected because this alt. affords the fewest management options. Mitigation: None	No impacts	Impacts: These resources could be affected because it affords the fewest management options. Mitigation: None

	2, 3, 4	Impacts: Under these alternatives, paleontological resources could be affected by illegal collection. Mitigation: Educational materials, additional on-the-ground management visibility would reduce illegal collections and loss of resource.			
Visual Resource Management (Federal land only)	1	Impacts: No effect Designated VRM Class II	N/A	N/A	Impact: Facilities will be removed, improving scenic quality from river. Structures not visible from road or most of adjoining properties.
	2	Impact: Surface disturbance from visitor facilities would affect scenic quality. Designated VRM Class IV Mitigation: BMPs would be employed to reduce impact to visual quality			Impacts: Surface disturbance from visitor facilities would affect scenic quality. Designated VRM Class III Mitigation: BMPs would be employed to reduce impact to visual quality
	3				Designated VRM Class IV
	4				Designated VRM Class IV

Recreation	1	Impacts: BLM-Low level casual use will continue	Impacts: Unmanaged visitation and lack of trail design may cause localized soil erosion and compaction and degradation of vegetative habitat in areas of repeated use .	Impacts: Continued informal trail establishment and poor parking situation may cause erosion where current parking lot exists and along water access routes.	No impacts
		Mitigation: None identified	Mitigation**:** Monitor site to identify any degradation from over use and implementing measures to minimize or prevent the impacts. Fishing and/or hunting permits required.		N/A
	2	BLM-trails will provide opportunities for hiking, biking, horseback riding, hunting, and wildlife viewing. Safety issues could arise during hunting seasons due to increased use of designated trails, as well as off trail use by visitors other than hunters. Shoreline will provide day use opportunities, e.g., picnicking, for visitors in non-motorized boats.	Impacts: There would be negligible impacts on the quality of the recreational experience due to the levels and intensities of use and numbers of visitors.**:**		Day use opportunities available to visitors using non-motorized boats.

		Mitigation: Monitor and evaluate recreational activities through an annual work plan to identify and address areas of potential resource degradation and user conflicts. Manage potential user conflicts through visitor education, signage, and trail and facility location and design. The location, number and types of trail systems and public facilities are subject to future project review and site plans that also address visitor use. . Manage hunting through permitting.		
	3	Same as Alt. 2.	There would be negligible impacts on the quality of the recreational experience due to the levels and intensities of use and numbers of visitors.	Day use and camping opportunities available to visitors in non-motorized boats
		Mitigation: Monitor and evaluate recreational activities through an annual work plan to identify and address areas of potential resource degradation and user conflicts. Manage potential user conflicts through visitor education, signage, and trail and facility location and design. The location, number and types of trail systems and public facilities are subject to future project review and site plans that also address visitor use. . Manage hunting through permitting.		
	4	Same as Alt. 2		Same as Alt. 3
Economic Conditions*	1	Potential Total Direct Expenditures: $9,300 Potential Total Output (Minus Other Costs): $5,698 Potential Earnings (Minus Other Costs): $175		
	2	Potential Total Direct Expenditures with Other Costs: $1,389,460 Potential Total Output (Minus Other Costs): $1,982,464 Potential Earnings (Minus Other Costs): $325,603		
	3	Potential Direct Expenditures: $3,090,260 Potential Total Output (Minus Other Costs): $4,412,700 Potential Earnings (Minus Other Costs): $714,442		

	4	Potential Direct Expenditures: $1,488,460 Potential Total Output (Minus Other Costs): $2,107,600 Potential Earnings (Minus Other Costs): $350,100 Notes: Total Direct Expenditures includes: projected total annual recreation user expenditures, one selective harvest per year, on-site facility construction and\or guide services, depending on the alternative. Total Direct Expenditures do not include equipment purchases. Estimated outputs and earnings are calculated from direct expenditures minus Other Costs as defined in the 2001 U.S. Fish and Wildlife's Maryland Survey and applied to RIMS II. Refer to the Appendix 14 Economic Analysis – Methodology, Assumptions, Limitations and Sources.	
Social Environment	1-4	Impact: None of the alternatives would affect the social environment. Economic conditions would not be affected to the extent that additional social services would be required.	
Human Health and Safety	1	Impacts: Possible safety issues to casual users using unimproved trails and walking along unsigned bluffs Mitigation: Place signs at trail heads and near bluffs	No impacts
	2	Impacts: Small increase in traffic resulting from additional heritage visitors could create minor traffic problems and chances for accidents. Mitigation: Access to public facilities may require deceleration lanes from local roads.	
	3, 4	Impacts: Additional traffic, especially in summer months and weekends may increase chances for vehicle accidents	

Other properties

Ben Doane Road (PEPCO Tracts 1 & 2)

West side of MD 224
Some impacts may include compaction of soil and erosion due to over-use of the parking area, unplanned trails blazed by visitors, impacts to understory vegetation, and erosion and degradation of streams and wetlands where informal crossings exist. The property should be monitored to prevent adverse impacts due to informal use by the public.

East side of MD 224
Some impacts may include compaction of soil and erosion due to over-use of the parking area, unplanned trails blazed by visitors, impacts to understory vegetation, and erosion and degradation of streams and wetlands where informal crossings exist, and human/car collisions due to unsigned pedestrian crossing. The property should be monitored to prevent adverse impacts due to informal use by the public.

Cumulative Impacts

The Council on Environmental Quality's (CEQ) NEPA regulations (40 CFR 1508.7) define cumulative impacts as the impact:

> . . . on the environment, which results from the incremental impact of the action, when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

In other words, federal agencies need to consider whether their actions could become the "straw that breaks the camel's back." The planning team analyzed whether the proposed activities could result in synergistic impacts. For instance, would any of the alternatives cause the loss of sufficient critical habitat to affect a special status species or increased numbers of tourists would overwhelm the existing local road network? This analysis showed that all of the draft alternatives consist of such low levels of activity and construction that they do not likely pose any measurable cumulative environmental impacts.

Under Alternative 1, It is possible that impacts from unplanned activities and unstructured uses, such as parking, trail blazing and trails establishment by visitors may include unsafe parking practices, road blockage, and degradation of roadside vegetation; soil compaction and erosions and degradation of understory vegetation along makeshift trails; increases in opportunistic wildlife species preferring edge habitat and areas of human activity, degradation of streams and wetlands at trail crossings due to run-off and sedimentation, litter and pollution, and impacts to shoreline vegetation due to increased visitation.

For the remaining alternatives, the impacts would be greater than Alternative 1. The degree of actual impact that would occur as a result of each alternative would depend, in part, on application of use limits to control visitor use. Assuming those limits were consistently applied among alternatives, Alternative 2 would have the least impact, followed by Alternative 4. Alternative 3 would have the greatest impact on the properties.

The common impacts would be soil compaction and erosion in day use areas and on trails, unplanned trails created by the public, degradation of understory vegetation along trails, increase in edge wildlife species and opportunistic species in areas of clearing and human activity, degradation of streams and wetlands at trail crossings and due to run-off, litter and pollution in the boat ramp area and day use areas, and impacts to shoreline vegetation due to increased visitation. In general, the properties would begin to look used, as opposed to the current conditions where evidence of human impact is relatively sparse.